

Response

Applicant: Michael R. Krause et al.
Serial No.: 09/578,019
Filed: May 24, 2000
Docket No.: 10991834-2
Title: RELIABLE MULTICAST

REMARKS

The following remarks are made in response to Non-Final Office Action mailed May 22, 2003. Claims 1-53 were rejected. With this Response, the claims have not been amended. Claims 1-53 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112

The Examiner rejected claims 1, 2, 5-10, 14, 21, 23-31, 34-37, 40, 45, and 47-53 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention for the phrases “unit of work” and “first unit of work stream” being indefinite.

Applicants respectfully point out that the present specification, beginning at page 2, line 12, states:

a unit of work is herein defined to be data which is transmitted between a source AI [application instance] and a destination AI. Accordingly, a source AI is the producer of the unit of work transmitted to the destination AI. The destination AI is the consumer of the unit of work sent from the source AI.

Furthermore, the present specification, beginning at page 10, line 3, states “AIs . . . produce units of work transmitted to the destination device . . .” The present specification, beginning at page 10, line 7 states:

SDR resources 102a at source device 104 multiplex units of work produced by source AIs 110, 112, and 114 into a serial unit of work stream provided on communication services/fabric 108. The serial unit of work stream is demultiplexed by SDR resources 102b at destination device 106 into units of work consumed by AIs 116, 118, and 120.

Thus, Applicants respectfully submit that the present specification clearly defines the terms “unit of work” and “unit of work stream.”

The Examiner rejected claims 14 and 40 under 35 U.S.C. § 112, for “in-flight” being a relative term which renders the claim indefinite.

Applicants respectfully submit that in the context of data processing and communication over a communication services/fabric and as used in claims 14 and 40, “in-

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“flight” unambiguously refers to units of data that are in transit from their source to their destination. Moreover, “in-flight” is used consistently throughout the present specification to refer to units of work that are in transit from the source AI to the destination AI. For example, the present specification beginning at page 17, line 1, states:

An AI can have multiple units of work in-flight at any given time depending upon the underlying communication services/fabrics capabilities. The number of units of work that a given AI can have in-flight at a given time is not limited by the possible scope of the reliable datagram service, but can possibly be limited by specific implementation details of the SDRs and the underlying communication services/fabric capabilities.

The present specification states beginning at page 24, line 15:

No matter where the source AI or destination AI abort error occurs, the units of work which are in-flight either need to be flushed or completed so that all resources can be recovered. . . . the source device . . . employs a small control structure to account for all in-flight units of work so that the units of work can be completed even though the units of work are no longer valid . . .

In view of the above, claims 1, 2, 5-10, 14, 21, 23-31, 34-37, 40, 45, and 47-53 are believed to be in form for allowance. Therefore, Applicants respectfully request that rejections to these claims under 35 U.S.C. § 112, second paragraph, be reconsidered, and that the rejections be removed and that these claims be allowed.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 1-4, 9-11, 15-16, 22, 29-33, 41-42, and 46 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672.

The Miller et al. patent presents a reliable protocol facilitating high-speed reliable file transfer to multiple simultaneous recipients, and discusses the use of negative acknowledgements (NAKs) in combination with successive retransmissions, or passes, to ensure the successful transmission of all intended data for each recipient. The Miller et al. patent is directed to a singular, reliable transmission paradigm wherein the source device, or server, multicasts in a first pass an entire file to an entire group of clients, and upon receiving NAKs from one or more clients, retransmits in a second pass to the entire group any frames

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for which corresponding NAKs were received in the first pass. The Miller et al. patent's transmission paradigm is singular in the sense that the multicast transmission of each pass is generic to all clients.

Conversely, independent claims 1 and 29 both include limitations of implementing multiple reliable transport services, wherein each reliable transport service is implemented between the source device and a corresponding one of the multiple destination devices in the multicast group. Therefore, Applicants respectfully submit that the Miller et al. patent does not teach or suggest implementing multiple non-generic reliable transport services as defined in independent claims 1 and 29.

The Van Loo et al. patent is directed to a ringlet system employing strong sequential ordering (SSO) of packets received at a receiver node. By contrast, independent claims 1 and 29 claim multiple reliable transport services for multicasting, and the present specification enables one skilled in the art to practice the claimed invention in network architectures other than the ringlet topology. Applicants respectfully submit that the Van Loo et al. patent teaches away from applying the concept of strong sequential ordering outside the context of ringlet systems. Indeed, discussing the fundamental assumption on which the SSO extension of the Van Loo et al. patent depends, the Van Loo et al. patent beginning at column 12, line 6 provides "Fundamental to the proposal is the assumption that local ringlet transmission is unidirectional and bypasses no nodes. . .[a ringlet employing a short cut routing feature] would not support SSO ordering." Conversely, the data processing system and method of independent claims 1 and 29, respectively, combine strong ordering with the other claimed limitations, without the requirement of any specific network architecture, ringlet or otherwise.

Moreover, independent claim 1 claims a system employing source and destination resources (SDRs) for guaranteeing strong ordering. Conversely, the Van Loo et al. patent teaches various functions related to SSO that are performed by producer nodes and receiver nodes (see e.g., col. 13, line 18, et. seq.). The Van Loo et al. patent does not teach or suggest a structure employing SDRs and placing the SSO functionality into one or more of the SDRs.

In view of the above, the combination of the Miller et al., Van Loo et al., and Nessett patents does not teach or suggest all of the claimed limitations of independent claims 1 and 29.

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The Examiner rejected claims 5-8, 18-20, 34-37, and 44 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of Block et al. U.S. Patent No. 6,192,417.

The Examiner rejected claims 12 and 38 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of Hamilton et al. U.S. Patent No. 6,392,993.

The Examiner rejected claims 13, 14, 17, 39, 40, and 43 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of Muller et al. U.S. Patent No. 6,256,740.

The Examiner rejected claims 21 and 23 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of VanDoren et al. U.S. Patent No. 6,279,084.

The Examiner rejected claims 24, 26, 27, 47, 51, and 52 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of VanDoren U.S. Patent No. 6,279,084 in further view of Hamilton U.S. Patent No. 6,392,993.

The Examiner rejected claims 25 and 48-50 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of VanDoren U.S. Patent No. 6,279,084 in further view of Hamilton U.S. Patent No. 6,392,993 in further view of Miller U.S. Patent No. 5,553,083.

The Examiner rejected claims 28 and 53 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of Mallory U.S. Patent No. 6,335,933.

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The Examiner rejected claim 45 under 35 U.S.C §103(a) as being unpatentable over Miller et al. U.S. Patent No. 6,151,696 in view of Nessett et al. U.S. Patent No. 5,968,176 in further view of Van Loo et al. U.S. Patent No. 6,064,672 in further view of Block U.S. Patent No. 6,192,417 in further view of VanDoren.

As dependent claims 2-28 further define patentably distinct independent claim 1, and dependent claims 30-53 further define patentably distinct independent claim 29, these dependent claims are also believed to be allowable.

Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. §103(a) rejections to claims 1-53, and request allowance of these claims.

CONCLUSION

In view of the above, Applicants respectfully submit that pending claims 1-53 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-53 is respectfully requested.

The Examiner is invited to contact the Applicants' representative at the below-listed telephone numbers to facilitate prosecution of this application.

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Any inquiry regarding this Response should be directed to either Patrick G. Billig at the below-listed telephone numbers or William J. Streeter at Telephone No. (970) 898-3886, Facsimile No. (970) 898-7247. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

Michael R. Krause et al.,

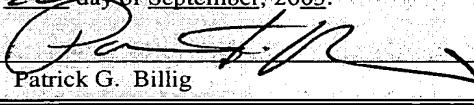
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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 22 day of September, 2003.

By 
Name: Patrick G. Billig